

WHAT IS CLAIMED IS:

1. A method comprising:
extracting overhead data from a frame;
sending the extracted overhead data to an external programmable device;
modifying the extracted overhead data of the frame in the programmable device;
receiving the modified overhead data from the external programmable device; and
inserting the modified overhead data into said frame.
2. The method of claim 1 wherein said modifying includes modifying at least some bits of the extracted overhead data.
3. The method of claim 1 further comprising storing payload data of the frame in a data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data, and receive the modified overhead data from the external programmable device.

4. The method of claim 3 including performing said extracting, storing, modifying and inserting in a pipelined manner.
5. The method of claim 3 comprising performing said extracting, sending, modifying, receiving, and inserting for another frame and including modifying extracted overhead data of the one frame according to a network state different from a network state used to modify the extracted overhead data of the other frame.
6. The method of claim 3 wherein the amount of time payload data of the frame is stored in a data structure is approximately equal to the total amount of time spent extracting, modifying and inserting the overhead data.
7. The method of claim 6 including adjusting at least one of the times for extracting, storing, modifying and inserting.
8. An apparatus comprising:
 - a network processor to process payload data of a frame;
 - a logic circuit coupled to the network processor, the logic circuit configured to:
 - extract overhead data from the frame;

send the extracted overhead data to an external programmable device;

receive modified overhead data from the external programmable device; and

insert the modified overhead data into said frame.

9. The apparatus of claim 8 further comprising an external programmable device, the external programmable device programmed to:

receive the extracted overhead data from the logic circuit;

modify the extracted overhead data; and

send the modified overhead data to the logic circuit.

10. The apparatus of claim 8 wherein the programmable device comprises a field-programmable gate array.

11. The apparatus of claim 8 including a data structure in the logic circuit, wherein the logic circuit is further configured to store payload data of the frame in the data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data, and receive the modified overhead data from the external programmable device.

12. The apparatus of claim 8 wherein the logic circuit is further configured to store payload data of the frame in a data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data, and receive the modified overhead data from the external programmable device.

13. The apparatus of claim 12 wherein the data structure comprises a first-in, first-out data structure.

14. The apparatus of claim 12 wherein the amount of time payload data of the frame is stored in a data structure is approximately equal to the total amount of time spent extracting, modifying and inserting the overhead data.

15. The apparatus of claim 14 including adjusting at least one of the times for extracting, storing, modifying and inserting.

16. An apparatus comprising:
a network processor to process payload data of a frame;
a logic circuit coupled to the network processor, the

logic circuit configured to:

extract overhead data from the frame;

send the extracted overhead data to an external programmable device;

receive modified overhead data from the external programmable device; and

insert the modified overhead data into said frame;
and

an external programmable device coupled to the logic circuit, the external programmable device programmed to:

receive the extracted overhead data from the logic circuit;

modify the extracted overhead data; and

send the modified overhead data to the logic circuit.

17. The apparatus of claim 16 wherein the logic circuit is further configured to store payload data of the frame in a data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data, and receive the modified overhead data from the external programmable device.

18. The apparatus of claim 17 wherein the amount of time payload data of the frame is stored in a data structure is approximately equal to the total amount of time spent extracting, modifying and inserting the overhead data.
19. The apparatus of claim 18 including adjusting at least one of the times for extracting, storing, modifying and inserting.
20. An apparatus comprising:
- a network device comprising:
 - a network processor, the network processor storing instructions that when applied to the processor cause the processor to:
 - extract overhead data from a frame;
 - send the extracted overhead data to an external programmable device;
 - process payload data of the frame;
 - receive modified overhead data from the external programmable device; and
 - insert the modified overhead data into said frame; and
 - an external programmable device coupled to the network processor, the external programmable device programmed to:

receive the extracted overhead data from the logic circuit;

modify the extracted overhead data; and

send the modified overhead data to the logic circuit.

21. The apparatus of claim 20 wherein the network processor is further configured to store payload data of the frame in a data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data, and receive the modified overhead data from the external programmable device.

22. The apparatus of claim 21 wherein the amount of time payload data of the frame is stored in a data structure is approximately equal to the total amount of time spent extracting, modifying and inserting the overhead data.

23. The apparatus of claim 22 including adjusting at least one of the times for extracting, storing, modifying and inserting.

24. A system comprising:

a source of data frames;

a destination for the data frames;

an external programmable device;

a network device to transfer the data frames from the source to the destination, the network device comprising:

a network processor to process payload data of a frame;

a logic circuit coupled to the network processor, the logic circuit configured to:

extract overhead data from the frame;

send the extracted overhead data to an external programmable device;

receive modified overhead data from the external programmable device; and

insert the modified overhead data into said frame; and

an external programmable device coupled to the logic circuit, the external programmable device programmed to:

receive the extracted overhead data from the logic circuit;

modify the extracted overhead data; and

send the modified overhead data to the logic circuit.

25. The system of claim 24 wherein the logic circuit is further configured to store payload data of the frame in a data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data, and receive the modified overhead data from the external programmable device.
26. The system of claim 24 wherein the amount of time payload data of the frame is stored in a data structure is approximately equal to the total amount of time spent extracting, modifying and inserting the overhead data.
27. The system of claim 26 including adjusting at least one of the times for extracting, storing, modifying and inserting.
28. An article comprising a computer-readable medium including computer-readable instructions that, when applied to a computer system, cause the computer system to:
- extract overhead data from a frame;
 - send the extracted overhead data to an external programmable device; and

in response to receiving modified overhead data from the external programmable device, insert the modified overhead data into said frame.

29. The article of claim 28 further storing instructions that, when applied to a computer system, cause the computer system to:

store payload data of the frame in a data structure for an amount of time based upon a time to send the extracted overhead data to the external programmable device, modify the overhead data in an external programmable device, and receive the modified overhead data from the external programmable device.

30. The article of claim 28 including adjusting at least one of the times for extracting, storing, modifying and inserting wherein the amount of time the payload data of the frame is stored in a data structure is approximately equal to the total amount of time spent extracting, modifying and inserting the overhead data.